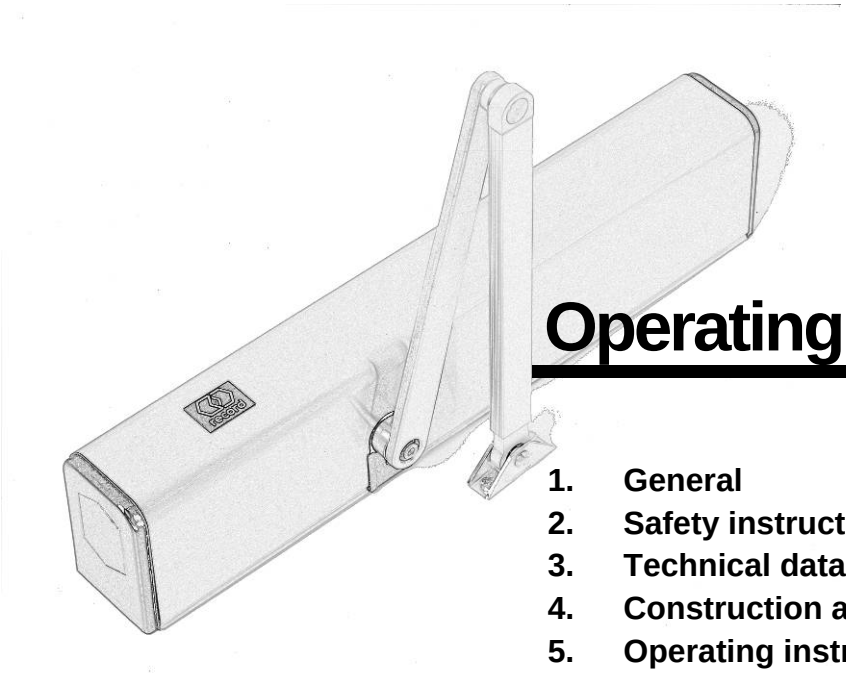
Automatic Swing Door Operator DFA 127 IN (Inverse)



Operating instructions E

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1 General

These operating instructions are intended for the record DFA 127 IN automatic swing door operator (herein after referred to as DFA 127). The operator is the person responsible for the technical maintenance of this door system.

These instructions describe the use of the record DFA 127 swing door operator. They form the basis for satisfactory functioning.

These operating instructions should be read by the door operator before commissioning and the safety instructions observed!

It is recommended to keep these operating instructions close to the automatic sliding door.

Product designation:	***Automatic swing door operator***
Product name:	***record DFA 127 IN***
Serial number:	_____ (please complete when installing)

2 Safety instructions

The record DFA 127 swing door operator has been constructed in accordance with the latest state of the art and the recognised technical safety regulations, including limiting of forces and speeds. Nevertheless, danger can arise for the user if not used as intended.

Installation, maintenance and repairs to the record DFA 127 must only be performed by qualified and authorized personnel (technicians).

2.1 Use as intended

The DFA 127 swing door operator is constructed exclusively for normal service with swing doors in dry rooms and must be installed within or inside buildings.

A different application or use extending beyond this purpose is not considered use for the intended purpose. The manufacturer declines all responsibility for resulting damage; the operator alone shall bear the associated risk.

Use for the intended purpose also includes observation of the operating conditions specified by the manufacturer, including use and adjustment of the correct type of arms, in addition to regular maintenance and repair.

Unauthorised modifications to the automatic door operator exclude any liability of the manufacturer for resulting damage.

2.2 General safety and accident prevention regulations

In general no safety devices (sensors) may be dismantled or put out of service.

During the learning cycle (which must only be performed by trained personnel) the safety devices (sensors) are switched off! It must be ensured, therefore, before initiating the learning cycle that no persons or objects are situated in the danger zone of the moving door leaves during the operation in order to avoid injury or damage!

No objects must be placed in the opening zone / path of the swing door to avoid crushing and shearing points!
The safeguard for crushing and shearing strains at the side edge must be provided by the manufacturer..

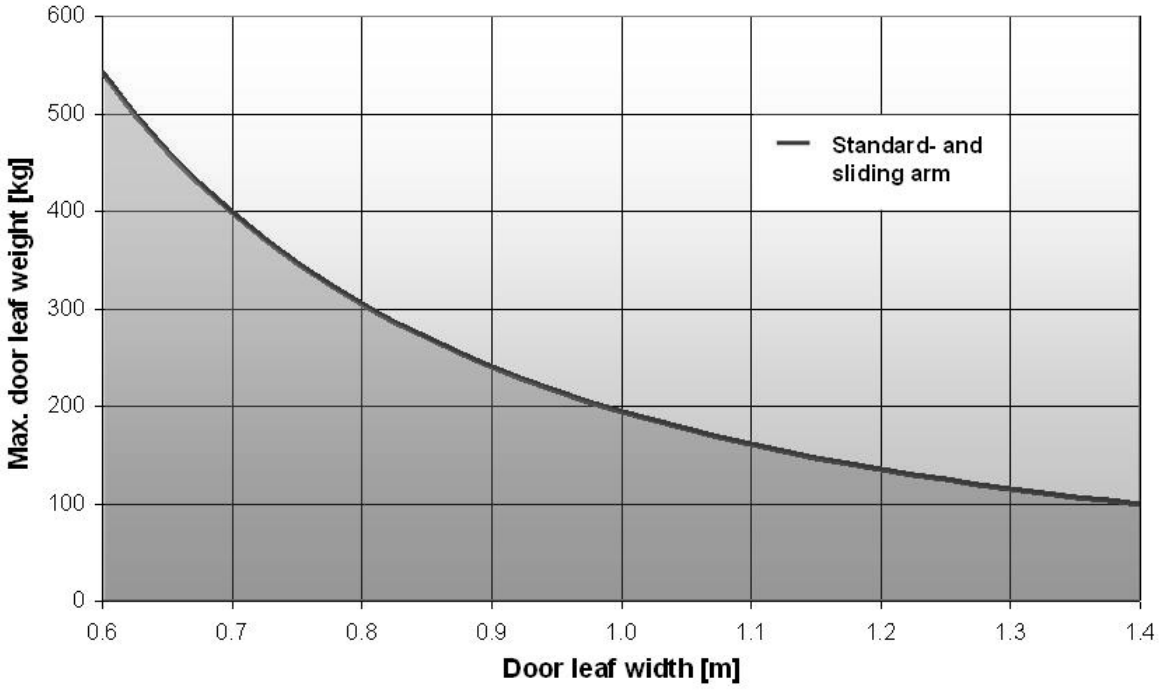
3 Technical Data

Dimensions:	Operator 600 x 85 x 124 mm (w x h x d)
Operating voltage:	230V~
Power consumption:	Standby 13 W, rated power 67 W
Max. torque:	50 Nm
Opening angle:	Adjustable from 70° to 115°
Time delay:	Adjustable from 0 to 20 seconds
Opening speed:	Adjustable from 3 to 20 seconds
Closing speed:	Adjustable from 5 to 20 seconds
Noise emission	-18 dB

Environment conditions

Temperature range:	-15 to + 50°C
Humidity range:	Up to 85% relative humidity, non bedewing

3.1 Permissible door leaf weights and door widths



The curves are calculated using to the following formula:

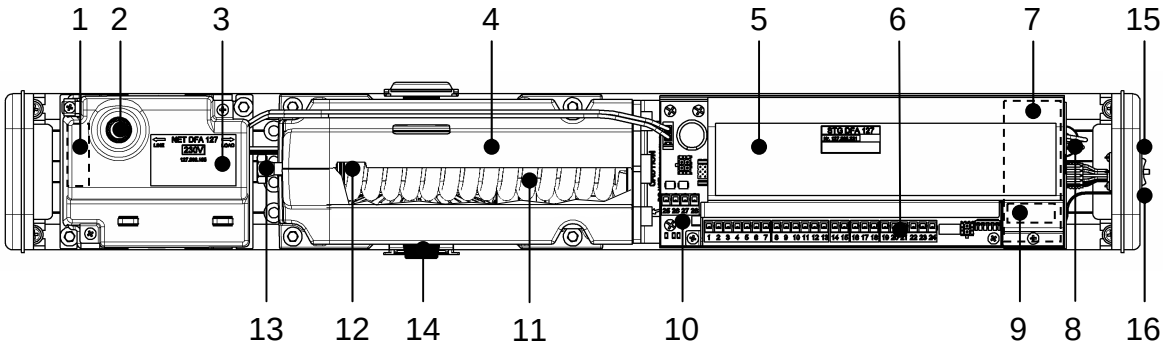
$$J = 1/3 \times m \times b^2$$

Standard arms : J max. 65 kgm^2
Slide arms : J max. 65 kgm^2

Key : J = mass moment of inertia [kgm^2]
m = door leaf weight [kg]
b = door leaf width [m]

4 Construction and Function

4.1 Construction



Key to illustration:

1	Mains connection terminals	9*	Slide switch S1 (rotating direction)
2	Fine-wire fuse	10*	Multifunctional switch MF on STG
3	Power supply NET	11	Closing spring
4	Drive unit ATM	12	Vision panel adjust. spring tension
5	Control unit STG	13*	Adjusting screw for spring tension
6	Connection terminals control unit	14	Connectors for arms (both sides)
7	Motor print MOT	15	Standard switch BDI
8	ATE drive unit terminals	16	Status signal and Reset button

* Do not change any settings or adjustments! These operations are reserved exclusively for trained and authorized persons.

4.2 Components

The record DFA 127 swing door operator forms part of an electromechanical swing door system and comprises the following main components:

Control unit STG: Intelligent, learning, microprocessor-controlled control system.

Driving unit ATE: Low maintenance DC geared motor with electronic path measurement, integral thermostatic protective switch, electro-magnetic brake and gear box with adjustable spring tension.

Power supply NET: Compact 230 V power supply with integral input filter and over-voltage protection.

Control unit BDE: As required with convenient, simple mechanical control unit and / or a programmable electronic BDE-D.

Construction and Function

Arm types: Power transmission to the door leaf by use of standard arm pushing or sliding arm pulling.

Locking VRR (optional): It is possible to connect an electrical door opener (24VDC) to the operator.

Sensing units: Aesthetic actuating and self-monitoring safety elements with adjustable sensitivity ensure optimum, smooth and reliable operation of the door system.

4.3 Functional description

The record DFA 127 with inverse function has been designed to open without electrical power. It can be easily closed by hand and opens using the energy stored in the spring, with the motion damped by the motor acting as a generator. The door can be held closed without electrical power, for example, using the escape door opener Type 331 or 332 from eff-eff (fire door: closed without electrical power, escape and rescue route door: open without electrical power). If the door operator is connected to the mains power, the opening and closing movements will be assisted by the motor. There is thereby the possibility of fixing the door leaves in the closed and/or open position (electro-magnetic brake).

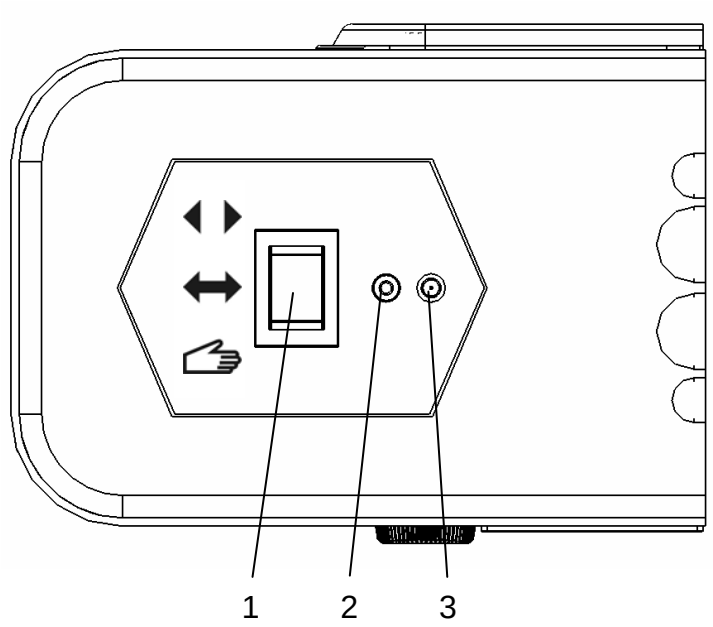
In the standard "Automatic" mode of operation the door system opens by the response of an actuating device (e.g. radar unit) to persons or objects approaching. The door closes after the door hold-open time, provided no further opening pulse is received.

In the "Lock" mode of operation, the door is only opened by actuation of an optional key-operated contact (SSK). The door closes after the SSK door hold-open time, provided no further opening pulse is received.

An obstacle to the swing door leave during ***Closing*** leads to an immediate re-opening (reverse). The obstacle position is recorded in the door operator and this position is approached slowly when next closing. An obstacle to the swing door leaf when ***Opening*** results in an immediate stop.

5 Operating instructions

5.1 Mech. control elements and indication



1 Mechanic BDI with 3 positions (control toggle switch)
2 Reset button
3 Status signal

Mechanical BDI (control toggle switch)

The following operational modes can be set up with the 3-position toggle switch on the side cover:

Manual operation
In this operating mode, the DFA can be opened and closed by hand. The door can be easily opened by hand, but must then be closed again by hand. The door is only held in position if the bolt can latch into an electrical lock. The connected actuating devices are no longer taken into account.

Automatic
The door opens and closes automatically through the activation of an actuating element.

Continuously open
The door opens and remains in the open position. If an obstacle is encountered while opening, the DFA will attempt to bring the door to the set open position for the next few seconds. If the obstacle is still present, the current position will be accepted as the continuously-open position.

Operating instructions

With the factory default setting, the mechanical BDI is always connected and active on a DFA 127. If an additional electronic BDE-D is connected, the operating mode will be set at the highest priority by a defined priority structure in the BDE.

The priority and the code shown in the following table apply to the operating mode, whereby BDE2 (S2) and BDE1 (S1) represent the two input terminals of the control unit (→ J7/1 + J7/2, p.c.b. BDE-M) for the mechanical BDE:

(L = interruption or 0V, H = +24V)

Mechanical BDI (toggle switch)		**Electronic BDE-D**	
BDE2 (S2)	**BDE1 (S1)**	**Function**	**Priority** (1=highest)
		locked	1
		one-way	2
L	H	continuously open	3
H	L	manual	4
L	L	automatic	5

The BDE-D indicates the current operating mode.

If an operating mode is set on the BDE-D, which has no current priority, the status message 62 is displayed.

Reset button

After pushing for approx. 5 sec. a new start of the control is performed (software reset). After the reset the LED lights up permanently.

Status signal

- Remains off if no fault is present.
- Will blink if a fault is present (see status and fault signals / chapter 8)
- Does light up permanently during a reset.

5.2 Auxiliary controls on the control unit STG 127

General:

The STG 127 operates with an active HIGH level, i.e. a +24 V level must be applied to activate a function. Safety inputs are activated during interruptions. The signal ground (0V) is connected to the protective earth.

Jumpers:

J14: Master / Slave
jumper at position M1 for master (factory setting)
jumper at position S1 for slave

J13: CAN line termination

LED's:

LD1: (red) control LED for push-button operation (S1)

LD2: (green) +35V
Off for power failure

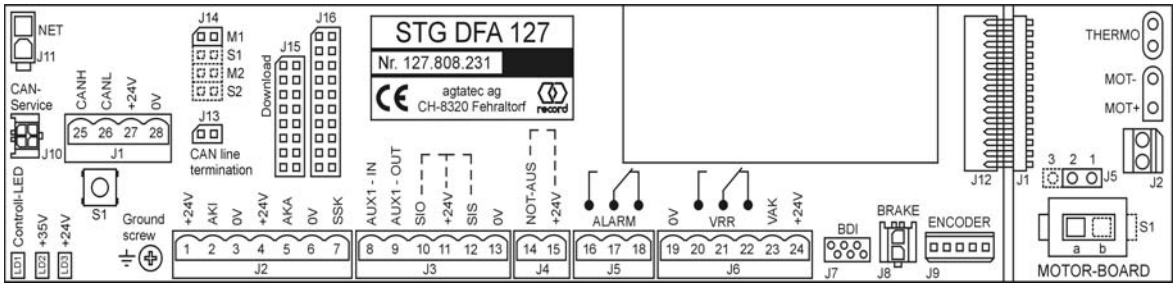
LD3: (green) +24V
Lights if +24V present.
Caution: in the event of a power failure processor reset takes place 1 second after this LED extinguishes.

Push button S1

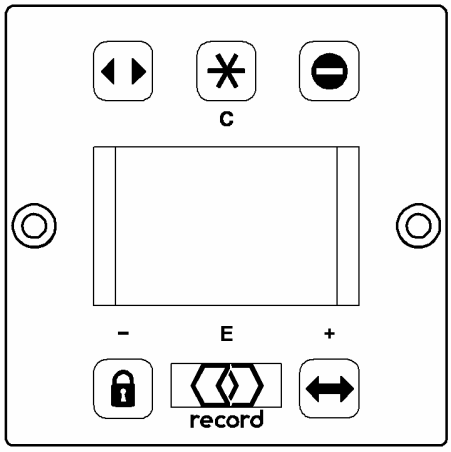
This is a multifunctional switch on controller (MF).

The use of this switch is reserved exclusively for trained and authorized persons.

Top view of the control unit STG:



5.3 Functions of electronic controller BDE-D (optional)



The BDE-D electronic controller is an easily operated input and output device for the control and adjustment of record door operators. Logically arranged pushbuttons allow intuitive operation and navigation through the operator-specific menu. The LCD with backlight shows data and information about the door status with symbols and text messages.
Additional information can be found in the BDE-D manual (No. 903 109 271).

5.4 Operation modes

Automatic
Normal function
Table to signals (X marks a release reaction)

	CLOSED	OPENING	OPEN	CLOSING
AKI	x	x	x	x
AKA	x	x	x	x
SSK	x	x	x	x
SIO		x	x	x
SIS			x	x

One-way traffic
In one-way traffic mode people cannot enter the room from the outside but they can leave it from the inside.
Table to signals (X marks a release reaction)

	CLOSED	OPENING	OPEN	CLOSING
AKI	x	x	x	x
AKA*		x	x	x
SSK	x	x	x	x
SIO		x	x	x
SIS			x	x

* AKA is active as safety device while closing

Operating instructions

Manual operation

The door can be opened and be closed again by hand if it is held closed by an electrical lock.

Open continuously

The door is opened and stays open.

Locked

In the operation mode Locked the locking is activated.
Table to signals (X marks a release reaction)

	CLOSED	OPENING	OPEN	CLOSING
AKI		x	x	x
AKA		x	x	x
SSK	x	x	x	x
SIO		x	x	x
SIS			x	x

Reset

After pushing on the button for approx. 5sec. this status message on the display is:

No
Reset Operator?
Yes

Pushing again on the button resets the operator.

6 Configurations

6.1 Parameter Overview

record parameter overview sheet DFA 127 IN (Inverse)				Please always leave the parameter overview sheet in the operator even when the STG is replaced!						≥ **V1.31**
Master or Slave										
D = Value will reset after default parameter loading S1 = Slave 1 or Slave 2 M = Change in parameter only with multifunctional button on control unit (technical level)				**All parameter modifications** must be marked as follows in the relevant box: Speedo: **programmed value** parameter value: **X** (mark)						
Parameter number				Parameter value (**factory settings** printed bold)						
D	S1	Description	M	1	2	3	4	5	6	
		DRIVING CYCLE								
X		Closing speed			*(Speedo)*					
X		Opening speed			*(Speedo)*					
X		Acceleration	M		*(Speedo) Different accelerations*					
X		Latch check	M		*(Speedo) Start latch check by closing*					
		TIME DELAY OPEN								
X		Time delay open			*(Speedo)*					
X		Time delay SSK			*(Speedo)*					
		DRIVE								
X	X	Opening angle			*(Speedo)*					
X	X	Collision	M		*(Speedo)*					
	X	Brake	M	**Without**	Closing position	Opening position	Open/Clos pos.			
	X	Types of arms	M	Standard arm	**Sliding pullling**	Sliding pushing	Inheader			
		Invers	M	**Disabled**	Enabled					
		ENTRANCE SYSTEM								
X	X	Control	M	**Single control**	Master control	Slave control				
X		Interlock type	M	**Without interlock**	Master-Slave *(single leaf interlock control)*	Master-Master *(double leaves interlock control)*				
		Door type	M	**Basic operator**	USA	USA Low Energy	EU Low Energy	UK	UK Low Energy	
		MS 2-LEAVES								
X		Function AKA	M	**Master+slave**	Master only					
X		Overlap	M		*(Speedo) 0 = No overlap*					
X		Open sequence	M		*(Speedo) 0 = Simultaneous opening*					
X		Close sequence	M		*(Speedo) 0 = Simultaneous closing*					
		MANUAL CONTROL								
X		When locked	M	**Disabled**	Enabled					
X		Closing speed	M		*(Speedo)*					
		CONTROL PANEL								
X	X	Mech. panel	M	**3 Pos. (AUTO)** *Manual; Automatic; Cont. open*	4 Positions *Automatic; Manual; Cont. open; Locked*	3 Pos. (OFF-A) *Automatic; OFF; Cont. open*	3 Pos. (OFF-M) *Manual; OFF; Cont. open*	3 Pos. (Lock-A) *Automatic; Locked; Cont. open*	3 Pos. (Lock-M) *Manual; Locked; Cont. open*	
		BDE-D (submenu)								
		Language	M	Deutsch	Français	**English**	English US			
		Keyboard	M	**Normal**	OFF-Mode					
		Contrast BDE 1	M		*(Speedo)*					
		Contrast BDE 2	M		*(Speedo)*					
		Light time	M		*(Speedo)*					
		LOCKING								
		Locking function	M	**Normally locked**	Always locked					
		Lock type	M	**Standard**	Locking bolt	Magnet	Pulse			
		VRR manually	M	**Disabled**	Enabled					
		INPUT								
X		AUX1_IN	M	**Disabled**	BEA Bodyguard					
X		AKA_IN	M	**AKA**	Railbeam					
		OUTPUT								
X		AUX1_OUT	M	**Disabled**	BEA Bodyguard	Test sensors				
		MISCELLANEOUS								

Order number:	**Client:**							
Programming by end customer / changes	Date	Initials						

This parameter overview shows all possible settings. Depending on drive type and configuration the access is restricted.

Configurations

Configurations of the DFA 127 can only be made with the electronic BDE-D. If a toggle switch is connected, a BDE-D must be connected briefly for the configuration.

Further information for parameter changes can be taken from the user manual of the BDE-D (no. 903 109 271).

Please always leave the configuration review sheet in the drive!

6.2 Parameter description

Parameter	**Setting range**	**Factory default**	**Description**
DRIVING CYCLE			
Closing speed	0 - 40 (5 – 20 s)	18	Slider control with 40 steps
Opening speed	0 - 40 (3 - 20 s)	36	Slider control with 40 steps
TIME DELAY OPEN			
Time delay open	0 - 40 (0 - 60 s)	2	Effective with AKA, AKI and push to actuate 0 - 20: Steps of 1 s 21 - 40: Steps of 2 s
Time delay SSK	0 – 40 (0 - 60 s)	4	Effective with SSK 0 - 20: Steps of 1 s 21 - 40: Steps of 2 s
DRIVE			
Opening angle	0 - 40	35	The opening angle is estimated during the calibration run and is equivalent to the value of 40.

7 Maintenance instructions

7.1 General

The record DFA 127 swing door operator is a product of the latest technology. It has been carefully made and only leaves the factory following thorough testing.
Automatic swing doors should be operated and maintained to ensure safety at all times.

7.2 Care

The entire swing door system can be cleaned with a damp cloth and commercially available cleaning agents. The cleaning agent must be harmonised to the surface which has to be cleaned.
It is recommended to select the "Continuously open" or "Locked" mode of operation for this purpose, so that the door does not continually open and close unnecessarily.

7.3 Maintenance, periodic inspection

It is recommended to have a technical safety test with servicing performed by a specialist before first commissioning and as required, but at least twice a year.

Regular testing and servicing by our fully trained personnel therefore offers the best guarantee for a long service life and satisfactory operation. We therefore recommend the signing of a maintenance agreement. Our service department will be pleased to submit a proposal.

If nevertheless a fault should occur, which you cannot eliminate (see section 8) our service organisation or the maintenance personnel of our agents are available.

7.4 Service centres

In Switzerland: Phone +41 (0) 44 954 92 92 / Fax +41 (0) 44 954 92 00

Alternative service centre: _____

8 Action in case of faults

8.1 Fault indication

Various indications are given for an irregularity or fault depending on the control unit connected BDE-E or BDE-M.

When using a mechanical BDE (control toggle switch)
With the mechanical control unit it is not possible to display a detailed status signal. If a fault occurs (will be shown by the status signal on the side cover), please proceed according to section 8.2.

When using an electronic BDE-D

General

Any current operational faults in the drive system will be displayed in the Standard screen. If several faults are active, they will be numbered: e.g. Fault **1/2**

In case of an irregularity the display changes automatically from mode of operation level to error display. Every 2 seconds the backlight changes between normal /invers. Several errors can be displayed (e.g. 1/2 means: error no. 1 of total 2 errors).
After 10 seconds the telephone number of the responsible service centre is indicated alternating to the fault indication. The failure indication and the phone number change every 5 seconds, while the inverse flashing is remaining. The described sequence applies to all failures. However, previously the phone number must have been given by an authorised specialised person.

Information about the drive system, such as the software version, can be read out by pressing the record key.
After pressing this key once again, the phone number of the responsible service centre and the last appeared fault indication is displayed in the screen. If the fault message consists of several lines the first line will be displayed only.

Status signals with a "W" are warnings. For these the fault relay contact output is not connected. Elimination of the irregularity leading to the status signal is performed according to section 8.2

A status can usually be deleted by pressing the record key for 5 s (= Reset). This produces a new start in the control unit.
If, however, the cause of the fault has not been eliminated, the status message will appear again if the fault occurs again.

Action in case of faults

8.2 Error elimination

The majority of faults can be eliminated by consulting the following table. If the fault cannot be eliminated even after working through the table, please contact the service centre. Please also contact the service centre directly when no recommended action is specified in the table.

Status	Symptom, fault, door behaviour	Cause	Action (consult service if no recommend-action)
03	Door remains open	Actuating device inside active longer than 60 s	
05	Door remains open	Actuating device outside active longer than 60 s	
06	Door does not unlock	Unlocking fault	
23		Control unit SLAVE defective	Reset by service fitter
25		MASTER / SLAVE connection interrupted	Reset by service fitter
31	Door stops	EMERGENCY STOP button operated	Release EMERGENCY STOP button
37	Door stops	Faulty motor current	
38	Door changes to manual control	Excess temperature motor	Wait until motor has cooled
39	Peripheral devices take too much power	Overload on +24 V supply	Reset by service fitter
41	Door stops	Motor 1 thermal sensor defective	Reset by service fitter
43	Door stops	Incremental transmitter defective	Reset by service fitter
45	Minimum hold-open time increased to 20 secs.	Motor current time product too large	Wait until motor has cooled
46	Door stops	Control unit defective	Reset by service fitter
47	Door remains closed	SIO sensor longer activ than 60 sec.	Remove obstacle from surveillance range of sensor
50	Door stops	Control unit defective	Reset by service fitter
52		No valid drive parameter	Initiate calibration run
53	Door stops	Interruption motor	Reset by service fitter
54 W	Door jolts possibly while opening	Calibration run	Initiate 1 opening cycle
59	Door stops	SIS sensor longer activ than 60 sec.	Remove obstacle from surveillance range of sensor
60	Door stops	Parameter memory defective	Reset by service fitter
61	Door remains open	Key operated contact active longer than 60 s	Release key contact
62 W	Higher-order mode of operation present	Control unit BDE has no priority	Cancel higher-order mode of operation

Status and fault signals

8.3 Detail description of status indications

General

A status can usually be deleted by pressing the record key for 5 s (= Reset). This produces a new start in the control unit.
If, however, the cause of the fault has not been eliminated, the status message will appear again if the fault occurs again.

The following list contains the causes of faults in decreasing possibility. The fault at the bottom of the list has the smallest probability to occur in the control unit STG.

Status 3: **AKI sensor active longer than 60 s**
Automatically reset if everything is in order, or by service fitter

Status 5: **AKA sensor active longer than 60 s**
Automatically reset if everything is in order, or by service fitter

Status 6: **Unlocking error**
Bolt possibly jammed
Reset by service fitter

Status 9: **“Opening” unsuccessful (after 4 collisions)**
Check the interlock / remove obstacle
Reset through service fitter

Status 11: **Faulty motor current**
Possibly faulty wiring in prefabricated cables
Replacement by service fitter

Status 23: **Slave control unit defective**
Replacement by service fitter

Status 25: **Slave connection (CAN) to Master interrupted**
Clear by service fitter

Status 31: **EMERGENCY STOP operated. Motor relay de-energises**
Reset by resetting the EMERGENCY STOP button

Status 37: **Motor current**
STG or ATE defective
Reset by service fitter

Status 38: **Overheat motor**
Manual control effective
Door leaves possibly too heavy, or too much friction
Reset by motor cooling down or by service fitter

Status and fault signals

Status 39: **Overload on + 24 V supply**
Too many external units possibly connected
Reset by service fitter

Status 41: **Motor – temperature sensor defective**
Motor possibly not connected
Sensor in motor possibly defective or cable break in sensor lead
Reset by service fitter

Status 43: **Incremental encoder fault**
Input cable possibly not connected or cable break in the lead
Motor possibly blocked
Reset by service fitter

Status 45: **Motor current – time product to high**
Motor relay de-energises
Manual control effective
Automatic reset by motor cooling or by service fitter

Status 46: **Control unit STG defective**
Includes the following individual faults:
EPROM, RAM, Watchdog, Imax, ImaxT, difference on SHE-EXT
Reset by service fitter

Status 47: **SIO sensor active longer than 60 s**
Automatically reset if in order, or by service fitter

Status 50: **CPU2 is defective**
Reset by service fitter

Status 51: **Software version**
Software version of Master and Slave do not correspond to each other. Software update by service fitter

Status 52: **No running parameter**
Start calibration run

Status 53: **Interruption motor**
Possibly no connection to motor
Reset by service fitter

Status 54: **Calibration run**
Reset automatically

Status 59: **SIS sensor active longer than 60 s**
Automatically reset if in order, or by service fitter

Status and fault signals

Status 60: **Parameter memory (EEPROM) defective**
Change control unit
Reset by service fitter

Status 61: **SSK active longer than 60 s**
Automatically reset if in order, or by service fitter

Status 62: **BDE has no priority**
Because a higher-level signal is present
Automatically reset on release of BDE-button

Status 72: **Slave connection**
Master has no connection to Slave operator
Reset by service fitter

Status 88: **Difference parameter**
The common parameters of M/S operators do not correspond to each other.
Reset by service fitter

Status 89: **Master connection**
Slave has no connection to master operator
Reset by service fitter

Status 90: **Railbeam active > 60 sec.**
Automatically reset if everything is in order, or by service fitter

Status 91: **Bodyguard active > 60 sec.**
Automatically reset if everything is in order, or by service fitter

Status 92: **STG relay defective**
Replacement by service fitter

Status 93: **Overvoltage 24 V** (from 27V)

Status 94: **Spring calibration**
Automatic reset

Status 95: **Error in sense of rotation**

Status 96: **EEPROM void**

Status 99: **Operator rotates**
The grease in the gear will be dispersed.
Automatic reset

Status 105: **Test brake**
Automatic reset

Status and fault signals

Status 106: **Brake defective**
Reset or reset by service fitter

Status 107: **SIS defective**
A safety sensor (with test input) in closing direction is defective.
Reset by service fitter

Status 108: **SIO defective**
A safety sensor (with test input) in opening direction is defective.
Reset by service fitter

Status 109: **Factory settings**

Status 110: **No motor**
No motor detection during initialisation (motor temperature sensor).
Check motor temperature sensor.
Reset or reset by service fitter

A status number with a "W" is a warning !!